

### REMARKS

Claims 1-15 are pending in the applications. Claims 12-15 have been withdrawn from consideration and by this amendment canceled. Claims 1-11 have been rejected. Claims 1, 10, and 11 have been amended. Reconsideration and allowance of Claims 1-11 in view of the above amendment and following remarks is respectfully requested.

#### The Rejection of Claims 1-11 Under 35 U.S.C. § 112, Second Paragraph

Claims 1-11 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. The Examiner states that the terms "60%", "70%", and "85%" in Claims 1, 10, and 11, respectively, are unclear. Claims 1, 10, and 11 have been amended to recite "60% ISO", "70% ISO", and "85% ISO", respectively. Applicants have used the "% ISO" unit to describe pulp brightness throughout the application as originally filed. See, for example, page 12, lines 7 and 8; page 13, lines 11, and lines 34-35; page 14, line 4; page 15, line 12; page 31 and 32, Table 8; and page 39, line 17. Withdrawal of this grounds for rejection is respectfully requested.

#### The Rejection of Claims 1-11 Under 35 U.S.C. § 112, First Paragraph

Claims 1-11 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification as originally filed. The Examiner states that the terms "60%", "70%", and "85%" in Claims 1, 10, and 11, respectively, are not originally disclosed. The Examiner states that, at best, Example 6, Table 14 shows a brightness of 60.7, 69.7, and 74.4. Applicants respectfully traverse the rejection for the following reasons.

Applicants submit that the data in Table 14 supports a brightness value "of at least about 60% ISO", as recited in Claim 1, and "of at least about 70% ISO", as recited in Claim 10, based on the values in Table 14. Table 14 describes pulps having brightness values of 60.7, 69.7, 73.4, and 74.4, all of which are "at least about 60% ISO", and two of which are "at least about 70% ISO". Withdrawal of this grounds for rejection for Claims 1 and 10 is respectfully requested.

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Support for the recitation are "at least about 85% ISO" in Claim 11 can be found at page 38, lines 15-17. Withdrawal of this grounds for rejection for Claim 11 is respectfully requested.

The Rejection of Claim 1 Under 35 U.S.C. §§ 102/103

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious in view of the Singh reference. Withdrawal of this grounds for rejection is requested for the following reasons.

The Singh reference describes a one-stage oxygen-caustic soda treatment for Arundo donax Kraft pulp. The Singh reference does not teach or suggest an Arundo donax pulp having a brightness of at least about 60% ISO produced by a total chlorine-free bleaching process.

The Forest Products Association of Canada defines "total chlorine free (TCF) pulp" as pulp bleached without chlorine gas or any other chlorine compounds. See attached Exhibit A, Forest Products Association of Canada, Pulp Diction website pages, which provides definitions of terms common to forest products. "Elemental chlorine free (ECF) pulp" is defined as pulp bleached without chlorine gas (i.e., Cl<sub>2</sub>, elemental chlorine). TCF bleaching processes do not include any processes that include elemental chlorine or "any other chlorine compounds" including, for example, chlorine dioxide (i.e., ClO<sub>2</sub>).

Contrary to the Examiner's statement, applicants believe that because Claim 1 recites bleaching by a total chlorine free process, Claim 1 does exclude from its scope any bleaching process that includes bleaching with chlorine gas (i.e., elemental chlorine) or any other chlorine compounds (e.g., chlorine dioxide).

Applicants believe that the Singh reference describes "full bleaching" processes that include processes other than total chlorine free bleaching process. Therefore, the reference does not describe bleaching processes that are total chlorine free.

More importantly, Claim 1 also recites that the bleaching process provides a bleached pulp having a brightness of at least about 60% ISO. The Singh reference fails to describe a total chlorine free bleaching process that provides an Arundo donax pulp having a brightness of at least about 60% ISO. Although the Singh reference appears to describe Arundo donax pulp having a brightness of at least 60% ISO (see Table IV, reported brightness values of 87.8 and 86), these brightness values are for pulp that has been bleached by processes that include chlorine agents, and are not, therefore, produced from total chlorine free bleaching processes.

Applicants submit that the brightness of pulp produced from oxygen delignification (or the single-step oxygen treatment as described by the Singh reference) does not achieve the brightness recited in Claim 1.

Because the cited reference fails to describe a total chlorine free bleaching process for Arundo donax that produces a pulp having a brightness of at least about 60% ISO, the reference fails to exactly describe the claimed invention, the reference is not anticipatory. Withdrawal of this grounds for rejection respectfully requested.

The Singh reference does describe pulps having the recited brightness. However, the reference fails to suggest that such pulps can be prepared by a bleaching process that is total chlorine free. Because the cited reference fails to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, applicants submit that the claimed invention is nonobvious and patentable over the cited reference. Withdrawal of this grounds for rejection is respectfully requested.

#### The Rejection of Claims 1-9 Under 35 U.S.C. §103

Claims 1-9 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Singh reference or WO 99/66119 in view of Canadian Patent 2,132,056, with or without WO 96/0943. Withdrawal of this grounds for rejection is requested for the following reasons.

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As noted above, Claim 1 recites a total chlorine free bleaching process that provides a bleached pulp product having a brightness of at least about 60%.

The Singh reference describes a one-stage oxygen-caustic soda treatment for Arundo donax kraft pulp. As noted above, the Singh reference does not teach or suggest an Arundo donax pulp having a brightness of at least about 60% produced by a total chlorine free bleaching process. Likewise, WO 99/66119 fails to describe chlorine-free bleaching of Arundo donax kraft pulp. The '056 application describes bleaching wood pulp using at least one of oxygen, ozone, chlorine dioxide, or hydrogen peroxide. WO 96/09434 describes bleaching wood pulp using at least two of the following bleaching chemicals: oxygen, ozone, or hydrogen peroxide.

The deficiencies of the teachings of the Singh reference and WO 99/66119 are not cured by the teachings of the '056 application, with or without WO 96/09434. Neither the Singh reference nor WO 99/66119 teach or suggest a total chlorine free process for producing Arundo donax pulp. Each reference describes Arundo donax pulp having brightness sufficient for commercial purposes. The '056 application and WO 96/09434 relate only to processing woods. These references fail to teach, suggest, or provide any motivation to pulp and/or bleach any non-wood, and certainly not Arundo donax. The teachings of the '056 application, with or without WO 96/09434, simply fail to fill the void of the teachings of the Singh reference or WO 99/66119 noted above.

Because the cited references, either alone or in any combination, fail to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, applicants submit that the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

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Conclusion

In view of the above amendments and foregoing remarks, applicants believe that Claims 1-11 are in condition for allowance. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to telephone applicant's attorney at 206.695.1755.

Respectfully submitted,

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# **PULP DICTION**

A glossary of some terms used in the industry



<u>Annual allowable cut (AAC)</u>	<u>Mechanical printing papers</u>
<u>Biodiversity</u>	<u>Newsprint</u>
<u>Boxboard</u>	<u>Open forests</u>
<u>Commercial forests</u>	<u>Paperboard</u>
<u>Containerboard</u>	<u>Printing and writing papers</u>
<u>Dioxin</u>	<u>Protection forests</u>
<u>Ecosystem</u>	<u>Sanitary papers</u>
<u>Effluent</u>	<u>Sludge</u>
<u>Elemental chlorine free pulp (ECF)</u>	<u>Softwood forests</u>
<u>Emission</u>	<u>Special papers</u>
<u>Furan</u>	<u>Sustainable development</u>
<u>Hardwood forests</u>	<u>Sustainable forestry</u>
<u>Heritage forests</u>	<u>Total chlorine free pulp (TCF)</u>
<u>Kraft papers</u>	<u>Total effluent free pulp (TEF)</u>
<u>Market pulp</u>	<u>Woodfree papers</u>

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## **Annual allowable cut (AAC)**

The volume of wood governments allow companies to cut each year. The setting of the allowable harvest volume is an important part of any forest management plan. The main factor in calculating the allowable harvest is the growth rate of the forest.

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## **Biodiversity**

The full spectrum of plants and animal life across ecosystems; includes genetic diversity, species diversity, landscape diversity and ecosystem diversity.

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## **Boxboard**

A general term designating the paperboard used for fabricating boxes. It may be plain, lined or clay coated and made from wood pulp, paper stocks or any combination of these.

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## **Commercial forests**

Forest land that is able to grow commercial coniferous (softwoods), deciduous (hardwoods), and mixed woods timber within an acceptable timeframe.

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## **Containerboard**

Component materials - linerboard and corrugating medium - used in the

manufacture of shipping containers and other corrugated board products.



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### **Dioxin**

Name given to a family of chlorinated cyclic compounds.


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### **Ecosystem**

A system formed by the interaction of a community of organisms within their natural environment. An ecosystem is usually defined by a dominating constituent. For example, trees dominate a forest ecosystem.

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### **Effluent**

Out-flowing stream from a process or confined space. The term is most often applied in liquid discharges into receiving waters. 

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### **Elemental chlorine free pulp (ECF)**

Refers to pulp bleached without chlorine gas.

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### **Emission**

Any waste by-product discharged to the environment (water, air or land).


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### **Furan**

Name given to a family of toxic chemicals that are related to dioxin and are often found with dioxins.


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### **Hardwood forests**

Forests dominated by deciduous trees, characterised by broad-leaved foliage. 

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### **Heritage forests**

Classified according to the World Conservation Union categories, these areas designated by federal and provincial agencies are protected by legislation from commercial harvesting. 



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**Kraft papers**

Papers made predominantly from wood pulp produced by the sulphate pulping process. They are comparatively coarse, noted particularly for their strength and, in unbleached grades, used primarily as wrappers or packaging materials. They can be converted into a wide variety of products such as grocers' bags, envelopes, multiwall sacks, tire wraps, butchers' wraps, etc.

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**Market pulp**

Market pulp is pulp sold in competition with other suppliers where there is no control of the buying/selling decision of one party by the other. The Canadian definition includes all pulp sold to overseas markets.

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**Mechanical printing papers**

These are coated or uncoated papers, excluding newsprint, containing more than 10 percent of fibres from a mechanical pulping process. They include papers for magazines, catalogues, directories, books, etc.

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**Newsprint**

A general term used to describe paper between 40 g/m2 and 57 g/m2 used primarily in the publication of newspapers. 📰

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**Open forests**

Forests typically found in alpine or subarctic regions where the trees are sparser and smaller.

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**Paperboard**

This category includes containerboard and boxboard.

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**Printing and writing papers**

Includes papers for magazines, catalogues, envelope, books, stationery, etc..



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**Protection forests**

These forests usually protect sensitive sites, such as watersheds and steep

slopes and are protected from harvesting by policy.

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**Sanitary papers**

These include any type of paper used for sanitary disposable purposes. Generally these papers are absorbent, bulky and have a soft texture.

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**Sludge**

Waste by-products (such as ink and fibre particles from recycled waste paper).

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**Softwood forests**

The predominant forests in Canada. Softwood forests are made up primarily of coniferous trees, characterised by needle-like foliage. 📷

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**Special papers**

Greaseproof and glassine papers are generally made from mechanical wood pulp and are highly hydrated so that paper is resistant to oil and grease. Glassine papers are supercalendered and transparent or opaque. 📷

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**Sustainable development**

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

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**Sustainable forestry**

Managing and using the forest to meet the various needs of today's society, while maintaining the productive capacity of natural forest ecosystems and the biodiversity of the forest.

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**Total chlorine free pulp (TCF)**

Pulp bleached without chlorine gas or any other chlorine compounds.


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**Total effluent free pulp (TEF)**

Pulp manufactured which produces no effluent.

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**Woodfree papers**

Coated or uncoated papers which contain at most 10 percent of wood fibres obtained by a mechanical process. They cover a wide range of end uses such as printing papers, bond, ledger, duplicating, envelope, stationery, magazines, etc. 

Growing up - Knowledge builder - Pulp diction - "Wood" you believe it  
The knowledge tree - Taking pulp and paper further